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[This Drawing is a reproduction of the original on a reduced scale.]

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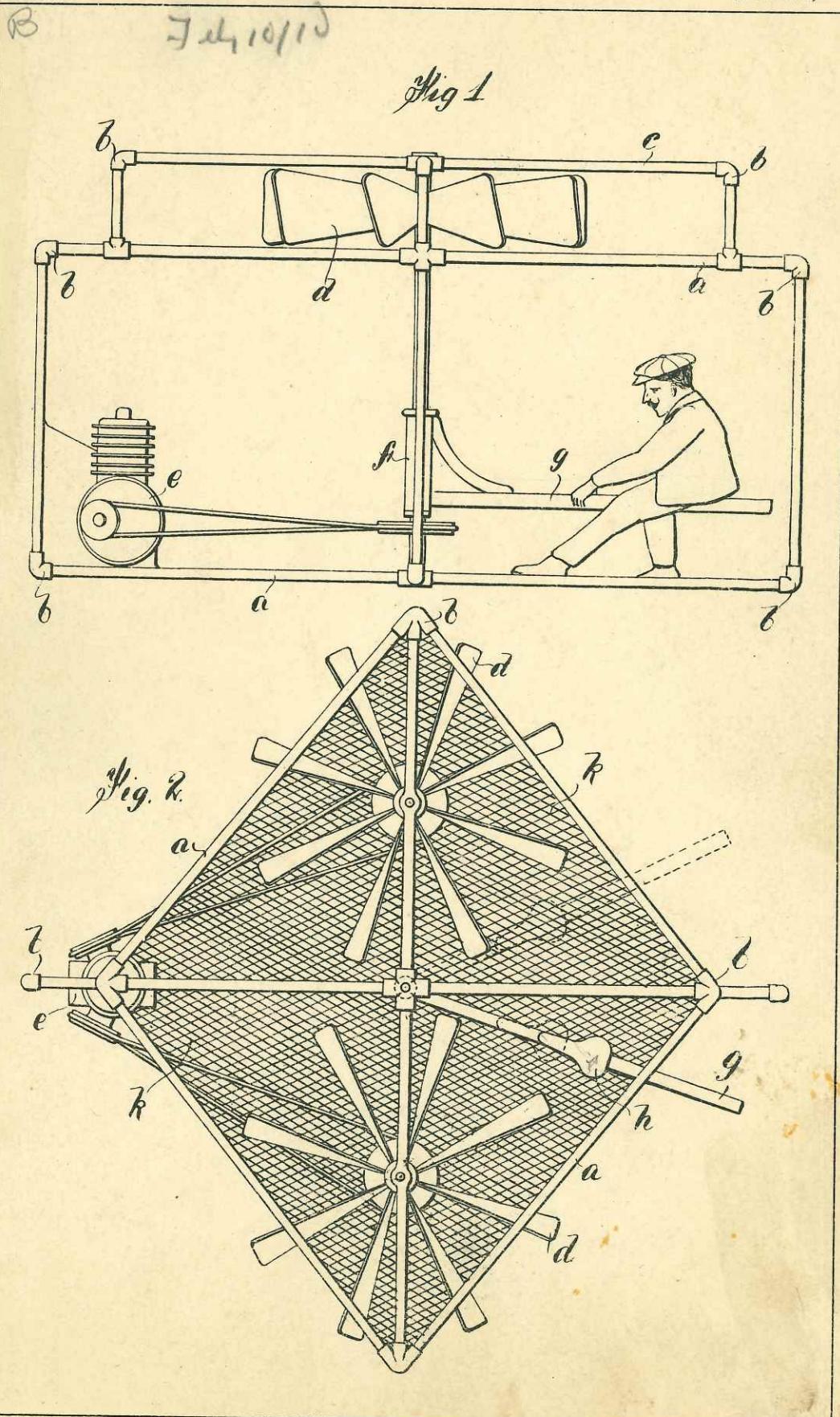
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BRITISH

OF

A.D. 1909. JUNE 26. N° 10,154.
POND'S COMPLETE SPECIFICATION.

(1 SHEET)



Scarf slideable in g to shift
& control gauge

Matty & Sons, Photo-Litho.

244-19
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A.D. 1909

Date of Application, 26th June, 1909—Accepted, 10th Feb., 1910

COMPLETE SPECIFICATION.

Improvements in Flying Machines.

I, JOHN POND, Journalist, of 100, Truro Road, Wood Green, in the County of London, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

5 This invention relates to improvements in flying machines, and is based upon the principles observed by me to be involved in the flight of birds and insects.

10 By a series of observations, I have come to the conclusion that the tail of a bird is not intended to act as a rudder or steering apparatus. Had it been so intended, its action would have been in a vertical plane, so as to act in a similar manner to the rudder of a ship. Again, if the wings of a bird had been intended to act as a direct means of forward propulsion, they would have been arranged at a different angle and would have worked from fore to aft in the manner of the side fins of a fish. Consequently, if the conception of flight 15 entertained by most aeroplanists were correct, the bird would have been provided with two sets of wings one set to maintain equilibrium and the other set for forward propulsion, and the bird would have had its tail so arranged as to act like a rudder for aerial navigation. The bird depends for propelling power entirely upon the force of gravitation and uses its wings merely as a 20 means for counteracting the earth's attraction, its mode for forward propulsion being to tip its body forward and so to alter the centre of gravity in proportion to the rate at which it wishes to go forward, consistent with the exertion of its wing power against the earth's natural attraction. When it wishes to turn to the left it throws the weight of its body to the left and *vice versa*, as a cyclist 25 does in turning corners.

My observations and experiments have taught me that in soaring only, does the tail of a bird perform any important function and that in soaring only does the tilt of the wings have much effect.

At one time, I reared from the nest three large black eagles and trained 30 them for experimental work, and I found that they could carry many times their own weight and that the more heavily loaded they were the more stable was their flight in very high winds and gusty weather, but as steps were taken to counteract their weight they became less and less able to navigate. The 35 stability of flight increased in proportion to the weight of the load, and the instability of flight increased in proportion to the means taken to counteract, by means of gas bags, the force of gravitation.

The solution, therefore, of the problem of human flight lies in the construction of a machine having sufficiently powerful means to counteract the force of gravitation without the aid of any substance lighter than air, and which 40 can be made to travel in any desired direction by means provided for the alteration of the position of the centre of gravity.

Various machines have already been devised with the object of carrying these observed particulars into effect. It has, for instance, been proposed to furnish an aeroplane with one or more horizontal or other propellers tending 45 to raise the machine from the ground and to provide means such as a movable

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weight for enabling the position of the centre of gravity of the whole machine to be altered, or to provide a car or seat which can be moved to enable the aviator to bring his weight into different positions so as to change the position of the centre of gravity.

My present invention relates to an improved form of flying machine of this type in which owing to the construction, the aviator is enabled to bring the seat into any position in a given plane, thus enabling him to have a far freer movement than is possible with machines of this description as hitherto constructed.

In the preferred method of carrying out my invention, I mount the saddle 10 or seat on a rod in such a way that it will slide longitudinally upon such rod, and I mount the rod so that it will rotate about a central shaft, which central shaft may be the shaft working the propellers, in which case the rod is attached to a sleeve encircling the shaft. By this arrangement it is possible to bring the saddle or seat into any required position in a given plane, thus 15 enabling the aviator to shift the position of the centre of gravity in any required way by moving the saddle and with it his weight into the required position.

And in order that my said invention may be better understood, I will now proceed to describe the same with reference to the drawing accompanying this specification in which:—

Figure 1 is a side elevation of a flying machine constructed according to my invention:

Figure 2 is a top plan of same.

The same letters of reference are employed to denote the same parts in both the views:—

The framework of the machine is composed of a number of tubes or rods of metal, bamboo or other suitable material *a*. These are attached together by suitable angle pieces *b* in the way shown in the drawing. Mounted above the main framework formed by the rods or the like *a*, is a secondary framework formed by the rods *c*, and between the frameworks *a* and *c* are mounted in 25 suitable bearings on the said frameworks, fans *d*. These fans *d* are so connected by suitable gearing that they rotate preferably in opposite directions. They are operated from a motor *e* through a suitable belt or other gearing. Mounted loosely so as to rotate about the central shaft is a sleeve *f* to which is 30 connected a rod *g* carrying a sliding seat *h*. *k* is a net which is placed at the bottom of the framework *a* but may be extended if desired over the sides and 35 top.

In starting, the operator takes his seat in such a way that the pull of the machine is above the centre of gravity. He now starts the engine and when the wings attain sufficient velocity, the machine rises steadily upwards. When 40 the operator requires to move forward he slides the seat *h* so as to approach the central post, thus bringing the centre of gravity more forward and causing the machine to move forward. If, on the contrary, he wishes to move to one side the operator swings over to that side which will cause the machine to 45 swerve to that particular side. When he requires to descend it is simply necessary to slow down the propellers when the machine will steadily settle down.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is:—

1. In an aeroplane or other aerial vessel provided with means for rising vertically from the ground, the saddle or seat so mounted that a compound movement may be given to it enabling it to be brought into any required position in a given plane for the purpose set forth.

2. A constructional form of the aeroplane or other aerial vessel claimed in 55 Claim 1 in which the saddle or seat is slidably mounted on a rod, one end of

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such rod being fixed to a shaft or sleeve enabling the rod to be turned into any desired position for the purpose set forth.

3. The particular form of aeroplane or aërial vessel herein described and shown on the accompanying drawing.

5 Dated this 26th day of June, 1909.

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